

### Supplier Document Status Stamp

|  |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|--|---|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|
| <b>BSC</b>   | A. Records Designator: <input type="checkbox"/> QA: QA <input checked="" type="checkbox"/> QA: N/A<br>B. Procurement Document No. <u>  NN-HC4-00239  </u><br>C. BSC Standard Document No. <u>  V0-HX00-NHC4-00239-00151-001-002  </u> |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| <b>D. SUPPLIER DOCUMENT STATUS</b>   |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 1. <input type="checkbox"/> WORK MAY PROCEED.<br>2. <input type="checkbox"/> REVISE AND RESUBMIT. WORK MAY PROCEED SUBJECT TO RESOLUTION OF INDICATED COMMENTS.<br>3. <input type="checkbox"/> REVISE AND RESUBMIT. WORK MAY NOT PROCEED.<br>4. <input type="checkbox"/> REVIEW NOT REQUIRED. WORK MAY PROCEED.<br>5. <input checked="" type="checkbox"/> FOR INFORMATION ONLY. REVIEW NOT REQUIRED. |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| PERMISSION TO PROCEED DOES NOT CONSTITUTE ACCEPTANCE OR APPROVAL OF DESIGN DETAILS, CALCULATIONS, ANALYSES, TEST METHODS, OR MATERIALS DEVELOPED OR SELECTED BY THE SUPPLIER AND DOES NOT RELIEVE SUPPLIER FROM FULL COMPLIANCE WITH CONTRACTUAL OBLIGATIONS.  |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| E.<br>REVIEW<br>COPY   | NVM NE<br>by MK   | <table border="1" style="width: 100%; height: 40px;"> <tr><td> </td><td> </td></tr> </table> |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| F. Area Code <u>  N/A  </u> System Code <u>  N/A  </u> Baseline Level <u>  N/A  </u>   |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| G. DOCUMENT CATEGORY <u>  N/A  </u><br>(Attach 3, Attach 4, or SSRS Form as applicable)  |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| H. <u>William Barfield</u><br>RESPONSIBLE ENGINEER/ANALYST (Printed Name and Signature)  |   | <u>9/1/08</u><br>DATE  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |

Title: Technical Memo: Construction Cost Escalation from 2005 to 2008 Dollars

Supplier Document #: N/A

Supplier Rev.: 01

Supplier Date: 03/27/2008



# Transportation Data Pedigree Form

Complete only applicable items.

|                       |  |                              |                       |
|-----------------------|--|------------------------------|-----------------------|
| Subcontractor:<br>N/A | Item Number/Title/Revision:<br>Technical Memo: Construction Cost Escalation from 2005 to 2008 Dollars Rev 01 | Submittal Date:<br>3/27/2008 | SRCT No.:<br>08-00076 |
|-----------------------|--|------------------------------|-----------------------|

**Section I. Submittal Information** (includes above information)

Submittal Description and Revision Summary for Entire Submittal:  
 The purpose of this technical memo is to provide an escalation of the construction cost estimate for the Mina and Caliente Corridors for 2005 dollars to 2008 dollars. Revision 1 to this Technical Memo corrects an error in supporting information that has no bearing on the escalation calculation. The memo presents the cost escalation data for the Mina Corridor in tabular form. A column in the table labeled 'Percent of Total Cost' contained incorrect data that was corrected in Revision 1.

Special Instructions:  
 Cross-reference to T07-00142 Comparative Cost Estimates Mina Rail Corridor Summary Report, Rev. 01 Jul 23, 2007 (ENG.20070725.0020) and T07-00141 Comparative Cost Estimates Caliente Rail Corridor Summary Report, Rev. 00 July 3, 2007 (ENG20070724.0017).

**Section II. Data File Information** (Add lines below if needed for additional files. Indicate "Last item" or "End of list" after last line used.)

| Filename                                  | Rev. | File Size | Description (File description and revision summary for file)   | Application and Version/<br>Add-in or Extension and Version |
|---|------|-----------|--|---|
| Tech Memo Cost Escalation Rev1 080327.doc | 01   | 42 KB     | Technical memo to provide an escalation of construction cost estimates for the Mina and Caliente Corridors Revision 01 | Microsoft Word Document                                     |

\*\*\*\*\*Last Item\*\*\*\*\*

**Section III. Metadata**

|  |                                |
|--|--------------------------------|
| <input type="checkbox"/> <b>GIS Metadata</b><br>All GIS data is preferred in ArcGIS9.1 UTM, NAD1983, Zone11, Feet.   | Projection:                    |
|  | Datum:                         |
|  | Zone:                          |
|  | Units:                         |
| <input type="checkbox"/> <b>CAD Metadata</b><br>CAD drawings are preferred in Bentley MicroStation V8 and/or InRoads and should adhere to established CAD standards. | Level descriptions:            |
|  | Scale:                         |
|  | Units of Measurement:          |
|  | Horizontal and Vertical Datum: |

**Section IV. Data Screening (Completed by BSC personnel)**

|  |                                   |                                     |                  |
|--|-----------------------------------|-------------------------------------|------------------|
| Acceptable for Review?<br><input checked="" type="checkbox"/> Yes* <input type="checkbox"/> No | Screeners Name:<br>Cathy Stettler | Signature:<br><i>Cathy Stettler</i> | Date:<br>3/28/08 |
|--|-----------------------------------|-------------------------------------|------------------|

\*If "Yes", Data Storage Location: nvtdata\NRP\Task 17 Cost Estimating Support\08-00076 Construction Cost Escalation 05\_08 Rev 01 03-27-08

Comments: (Justification for returning submittal is **required**; other comments are optional.)

**Section V. STR/STR Support Disposition of Submittal**

|   |                            |           |
|---|----------------------------|-----------|
| Process for Review?<br><input type="checkbox"/> Yes <input type="checkbox"/> No** | ** If "No", date returned: | Comments: |
|---|----------------------------|-----------|

|  |   |                  |
|--|---|------------------|
| STR/STR Support Name:<br><i>William Garfield</i> | Signature:<br><i>Ann Kaplan for W. Garfield</i> | Date:<br>3/28/08 |
|--|---|------------------|

## TECHNICAL MEMO

---

**Title:** Construction Cost Escalation from 2005 to 2008 Dollars

**From:** William L. Garfield  
Bechtel SAIC

**To:** Mike West  
Potomac-Hudson Engineering

**Date Created:** 03/27/2008

---

### Purpose and Scope

The purpose of this Technical Memo is to provide an escalation of the construction cost estimate for the Mina and Caliente Corridors from 2005 dollars to 2008 dollars.

The estimated cost of the Caliente Corridor and the estimated cost of the Mina Corridor are provided in the following documents:

- Comparative Cost Estimates Mina Rail Corridor Summary Report, Rev. 01 July 23, 2007. NRP (DIRS 182778)
- Comparative Cost Estimates Caliente Rail Corridor Summary Report, Rev. 00 July 3, 2007. NRP (DIRS 182777)

The above reports provide cost estimates for the respective corridor in 2005 dollars. This technical memo provides escalation factors that present corridor costs in 2008 dollars.

### Development of Escalation Indices

The escalation is based on Global Insight's 3rd Quarter 2007 Forecast. This forecast contains numerous indices covering a broad range of industry segments, commodity groups, and labor categories. To support the escalation of the Nevada Infrastructure Project, three indices were selected to reflect the anticipated cost increase as follows:

CCIH&ST - Highway Construction Cost Index (1997=1.000). This index reflects the costs of linear projects that involve earthworks, bridge and drainage structures. For the purpose of the Nevada Rail Line, this index was applied to costs associated with earthworks, bridges, drainage structures, signaling, communications, and ROW / land acquisition.

CCI13NS - ENR Construction Cost Index (1913=1.000). This index reflects costs associated with the facilities portion of the rail line. For the purpose of the Nevada Rail Line, this index was applied to cost associated with facilities including the interchange yard, REMY, and maintenance of way facilities.

ECIPCPARNS - Compensation, Professional and Related. This index is an employment cost index that reflects cost escalation associated project management and professional staff. For the purpose of the

Nevada Rail Line, this index was applied to costs associated with project management, engineering, and technical support staff.

**Summary of Cost Escalation:**

Using the cost escalation indices described above, the escalation rate for each cost element is derived by dividing the 2008 index value by the 2005 index value yielding the results shown in the following table:

$$\text{Escalation} = 100 * [1 - (\text{2008index} / \text{2005index})]$$

| Index Name            | CCIH&ST | CCI13NS | ECIPCARNS |
|-----------------------|---------|---------|-----------|
| Index Value (2005)    | 1.179   | 74.46   | 99.08     |
| Index Value (2008)    | 1.392   | 81.15   | 109.76    |
| Escalation Factor (%) | 18.1%   | 9.0%    | 10.78%    |

**Application of Indices to Caliente Corridor Cost:**

The escalated rate for the Caliente Corridor is derived by applying the escalation rate to the proportionate cost from each of the three cost categories as shown in the following table:

| Cost Category                     | Percent of     |                         |                 |                         |
|-----------------------------------|----------------|-------------------------|-----------------|-------------------------|
|                                   | Total Cost     | 2005 Dollars            | Escalation Rate | 2008 Dollars            |
| Professional and Management Staff | 9.40%          | 206,202,000             | 10.78%          | 228,430,576             |
| Linear Construction Cost          | 86.50%         | 1,896,798,000           | 18.10%          | 2,240,118,438           |
| Facilities Construction Cost      | 4.10%          | 89,849,000              | 9.00%           | 97,935,410              |
| <b>Total Cost</b>                 | <b>100.00%</b> | <b>\$ 2,192,849,000</b> | <b>17.04%</b>   | <b>\$ 2,566,484,424</b> |

The 17.04% escalation rate shown above is a composite escalation rate derived from the three cost escalation components.

**Application of Indices to Mina Corridor Cost:**

The escalated rate for the Mina Corridor is derived by applying the escalation rate to the proportionate cost from each of the three cost categories as shown in the following table:

| Cost Category                     | Percent of     |                         |                 |                         |
|-----------------------------------|----------------|-------------------------|-----------------|-------------------------|
|                                   | Total Cost     | 2005 Dollars            | Escalation Rate | 2008 Dollars            |
| Professional and Management Staff | 9.06%          | 157,421,000             | 10.78%          | 174,390,984             |
| Linear Construction Cost          | 86.33%         | 1,500,626,000           | 18.10%          | 1,772,239,306           |
| Facilities Construction Cost      | 4.61%          | 80,063,000              | 9.00%           | 87,268,670              |
| <b>Total Cost</b>                 | <b>100.00%</b> | <b>\$ 1,738,110,000</b> | <b>17.02%</b>   | <b>\$ 2,033,898,960</b> |

The 17.02% escalation rate shown above is a composite escalation rate derived from the three cost escalation components.

**Summary:**

This Technical Memo provides an escalation of the construction cost estimate for the Mina and Caliente Corridors from 2005 dollars to 2008 dollars. The cost escalation is calculated based on a composite

escalation derived from three indices. These indices reflect anticipated escalations in the cost of linear construction projects, construction of fixed facilities, and professional services.

Based on the analysis presented in this memo, it is recommended that the 2005 dollar cost for the Caliente Corridor be escalated by 17.04% to \$2.57 billion in 2008 dollars. Likewise, the 2005 dollar cost for the Mina Corridor should be escalated by 17.02% to \$2.03 billion in 2008 dollars.